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RED RIVER VALLEY WATER SUPPLY PROJECT

NEEDS ASSESSMENT

SPECIFIC PLAN OF STUDY

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Table of Contents

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INTRODUCTION

Development of a quality water supply of sufficient quantity for the Red River Valley in North Dakota has been a subject of interest and concern to local residents, government officials, and others. On December 15, 2000, the 106th Congress passed the Dakota Water Resources Act of 2000 (DWRA), which was signed into law on December 21, 2000. Sections 5 and 8 of DWRA authorize the Red River Valley Water Supply Project (Red River Project). The Act directs the Secretary of Interior to conduct a comprehensive study of the water quality and quantity needs of the Red River Valley in North Dakota (RRV) and possible options for meeting those needs. The Needs Assessment specific Plan of Study (Needs SPOS) will identify tasks which, when completed, will establish the future water needs of the Red River Valley in North Dakota.

The general outline for the development of the Red River Project is provided in the Master Plan of Study (MPOS). The MPOS provides more study background, authority, scope, process, purpose, and an overview of all study activities.

Purpose and Objective

The purpose of this Needs Assessment is to develop a comprehensive and detailed assessment of current and future water needs of the Red River Valley in North Dakota. DWRA identified the water needs of the Red River Valley as municipal, rural, and industrial (MR&I), water quality, aquatic environment, recreation, and water conservation measures. Water conservation measures or the potential for reduction in water demand related to water conservation, is estimated in the study. It however, is not strictly treated as a "need" in the same manner as MR&I needs are evaluated.

The objective of the Needs Assessment (Needs SPOS) is to update the available water use and demand information and develop a realistic future estimate of water needs to be used to complete hydrology, engineering, financial and environmental documentation components for the Report on the Red River Valley Water Needs and Options and the Red River Project Environmental Impact Statement (EIS).

The information developed for this study element will be derived from a variety of sources including:

- Bureau of Reclamation (Reclamation) Red River Valley Water Needs Assessment, Phase 1A; *Appraisal Report* (April 1998)
- Bureau of Reclamation (Reclamation) Red River Valley Water Needs Assessment, Phase 1B; *Instream Flow Needs Assessment* (August 1999)
- Reclamation Red River Valley Water Needs Assessment, Phase II; *Appraisal of Alternatives to Meet Projected Shortages* (January 2000)
- Consultation with regional experts in population projections and economic development
- Survey of potential users regarding their interest and commitment for an reliable raw water source
- Development of water supply and use master planning methods and approaches
- Local, state and federal wildlife agencies
- Local, state and federal recreation agencies
- Other sources as may be needed

The preparation of the Needs SPOS for the Needs and Options Report is intended to be both interactive and responsive to user groups. Water user groups will provide input and direction as to: 1) the users' current and realistic future MR&I water needs; 2) aquatic, recreational, and water quality needs; and 3) an indication of their interest in participating as long-term users in the proposed Red River Project with an understanding of their potential repayment requirements (costs) under DWRA.

The MR&I needs consist of a number of tasks to define the needs, capacity, and public interest in developing a reliable supply of MR&I water for potential users in the RRVRed River Valley. This work will update past studies, evaluate current conditions, and develop projections of water use for potential future water users in the Red River Valley service area. The Eastern Dakota Water Users Association, Red River Basin BoardCommission, and others, are sources for initial contacts and data regarding potential users.

The study's aquatic environment and recreational needs tasks will evaluate stream flow requirements. This work uses and updates past studies and develops current conditions and projections of water needs for the aquatic environment and recreation. North Dakota State Game and Fish Department, U.S. Fish and Wildlife Service, North Dakota Department of Tourism, North Dakota Parks and Recreation, Minnesota Department of Natural Resources, and other agencies are sources for initial contacts and data regarding the aquatic environment and recreational needs.

Needs Assessment Study Organization

The Needs SPOS divides the water needs into two main study areas: MR&I water needs and other water needs such as (aquatic environment and recreation) for all other uses. The tasks required to establish MR&I needs differ from those associated with aquatic environment and recreation needs. Water quality, potential water sources, and current water conservation measures will also be evaluated and integrated as part of the Nneeds Aassessment.

The SPOS describes a series of tasks that will be further developed into task orders. The task orders will describe the specific activities to be conducted as part of the Needs Assessment. Study teams will be organized to assist in the completion of the Red River Valley Water Supply Project.

NEEDS 1 - PROJECT MOBILIZATION AND STUDY APPROACH

Development of accurate water use information is a key element of any water supply planning study. The Needs and Options Report provides a comprehensive and detailed assessment of

current and future water needs of the Red River Valley in North Dakota. The scope of the Needs and Options Report is defined in the Dakota Water Resources Act of 2000, which identified the water needs of the Red River Valley as municipal, rural, and industrial, water quality, aquatic environment, recreation, and water conservation measures.

The Needs Assessment project mobilization and study approach will identify what type of current and future water needs data will need to be generated and the processes and methodologies to generate that data. These Needs Assessment processes and methodologies include the following:

- Identification of Needs Assessment data gathering and products
- Establishing planning approach and assumptions
- Identifying resources that will be used in the assessments
- Identifying methodologies for population and economic development projections
- Identifying the methodologies for water use projections

Needs 1.1 - Identification of Needs Assessment Data Gathering and Products

The foundation of the Needs and Options Report is the specific water needs data produced in the Needs Assessment. All other Needs and Options Report activities are profoundly affected by the quality and quantity water needs identified in the Needs Assessment. Listed below are the various water use data sets and products that will be produced in the Needs Assessment to establish a comprehensive understanding of the water needs in the Red River Valley of North Dakota. These Needs Assessment outputs include:

- Existing and future MR&I water demands (per capita for municipal/rural and acre-feet for industrial) including potential water conservation options available that have or may present an opportunity to reduce water use
- Existing and future population projections
- Existing and future MR&I water needs (acre-feet)

- Analysis of current and future water quality issues, such as existing and presently proposed Safe Drinking Water Act regulations, supply concerns, health issues, customer service acceptable aesthetics, etc
- Evaluation and report on the condition of individual MR&I water systems in the Red River Valley of North Dakota and any deficiencies that could affect water quality or quantity needs
- Water quality requirements for aquatic environment and recreation
- Instream flow analysis for aquatic life to determine water needs
- Present and potential future recreational use of water resources (streams and lakes) in the basin and determination of water needs
- Financial interest and commitment of potential MR&I participants in the Red River Project to determine water needs and project sizing

Needs 1.2 - Planning Approach and Assumptions

This task will establish the planning approach and assumptions that will map the course of activities throughout the study. The planning approach describes the process for developing the types of data products needed for the Needs and Options Report. The water needs data products arewill be identified in the pervious subsection (Identification of Needs Assessment Data Gathering and Products).

Needs 1.2.1 - Planning Approach

This task will involve developing the two major types of water needs that were identified in DWRA, MR&I and aquatic environment/recreation. Water quality and water conservation were also identified in DWRA, but forunder this Needs Assessment, they are covered under MR&I or aquatic/recreation. The planning approach for MR&I and aquatic/recreation water needs are different, because the target water user is different. MR&I systems all have specific representatives or affected water users who can be contacted and involved in the study process. However, aquatic and recreational water needs, do not have specific representatives so the planning approach must be unique to address that need.

Needs 1.2.2 - Planning Assumptions

This task involves establishing planning assumptions needed to conduct the Needs Assessment. These assumptions and criteria will be used throughout the entire needs assessment process and are clearly documented in the introductory portions of the Needs Assessment because they will fundamentally affect how the assessment will be conducted and ultimately affect the outcome. The planning assumptions will include the following:

- Planning period through 2050
- Service area includes theof 13 eastern counties of North Dakota including Moorhead, East Grand Forks, and Breckenridge, Minnesota
- All public water systems in the service area (defined above) will be evaluated in the Needs Assessment including rural water systems and presently unconsolidated water users
- Future economic development and growth to determine industrial water needs
- Future MR&I water demands will be adjusted to reflect reasonable and sustainableachievable water conservation measures
- Final MR&I water needs will reflect the Red River Project participation interest of the expressed by water users in participating in the Red River Project.

Needs 1.3 - Needs Assessment Resources

This task identifies the resources that will be used during the course of conducting the Needs Assessment. This includes data and feedback from all levels of governmental agencies (federal, state, county or local), professional consultants, academic institutions, organizations who could provide specialized and specific regional expertise, and the general public. Listed below are some of the types of data or subject matter feedback that will be or provided during the Needs Aassessment work.

- Population data
- Water demand and rate data
- Water system evaluations

- Economic development needs assessment feedback
- Recreation
- Aquatic environment and stream habitat
- Water conservation
- Water quality data

Needs 1.4 - Methodologies for Projections of Population and Economic Development

This task involves defining the methodologies that will be used to estimate population and economic development projections.

Needs 1.4.1 - Population Projections

Population projections through 2050 will be conducted for counties and urban areas (cities, towns) for the Red River Valley in North Dakota and three counties/cities in Minnesota (service area). The 2000 U.S. census will be the baseline population data used in population projections.

Due to the importance of future population levels on water demands, more sophisticated population projection techniques will be implemented than were used in the Phase IA study (Bureau of Reclamation Red River Valley Water Needs Assessment, Phase IA; *MR&I Appraisal Report*, April 1998). Demographic modeling techniques will be used which include the affect of variables such as birth rates, death rates, and migration on population growth. The population projections will be conducted with input from state data centers and universities.

Needs 1.4.2 - Economic Development (Industrial Growth) Projections

The water needs analysis for industrial and large commercial businesses will be conducted based on a range of potential economic development scenarios for the Red River Valley. The purpose of this task is to develop realistic projections of future industrial and commercial activities for the Red River Valley in North Dakota. These projections can then be used to derive future industrial water requirements. A baseline of current and future water use and costs will be developed from information provided by local, state agencies, communities, and industries. A

range of potential economic development scenarios will then be developed, each incorporating different economic assumptions.

- This task will rely heavily on input from local experts who are familiar with commercial and industrial sectors applicable to the Red River Valley. Due to the uncertainty involved with predicting future economic growth, a range of potential growth scenarios and resulting commercial/industrial water requirements will be evaluated. The range of economic development scenarios will be compared to any available economic development forecasts for states adjacent to the region and to any planning forecasts available fro~~r~~m local agencies and districts.

Needs 1.5 - Final Red River Project Water Needs

The final Red River Project water needs will be comprised from three categories of need; MR&I, aquatic environment and recreation. The water quality and water conservation water needs (as identified in DWRA) are included under these three categories. Water conservation and water quality is included in the MR&I analysis and water quality is included under the aquatic environment and recreation water needs categories.

The Needs Assessment Appendix will document the entire needs assessment process and present the analysis products including the summary of final Red River Project water needs.

Needs 1.6 - Review of Project Mobilization and Study Approach.

The project mobilization and study approach as described under Needs 1.1 through 1.4 will be reviewed prior to being used in other tasks outlined in this~~e Needs~~ SPOS. Reclamation and/or study teams will review the project mobilization and study approach tasks, changes incorporated where appropriate, and final task products used in other Needs SPOS tasks.

NEEDS 2 - INITIAL WATER USER AND PUBLIC SCOPING MEETINGS

Water user and public input on Red River Project is vital to the development of a comprehensive Needs and Options Report. Water user and public scoeping meetings will be conducted early (and repeated if needed) in the Red River Project planning process to assure issues and concerns are addressed. The purpose of initial water user meetings is to inform MR&I water users of the Red River Project and invite their participation in the planning process.

While the Red River Valley water users can adequately address their water needs, the aquatic (Needs 9) and recreation (Needs 10) water needs do not have a specific group which represents those water interests. Therefore, public scoping meetings will be used to document issues, concerns and needs associated with aquatic and recreation water needs. Public scoping meetings, as described in EIS 3.5, will provide the public with information on the Red River Project and receive comments in accordance with the requirements of the National Environmental Policy Act (NEPA).

Needs 2.1 - Initial Water User Meetings

This task will involve development of Red River Project information materials to be presented at initial water user meetings. These meetings will be in addition to the meetings required under the NEPA scoping process that are described in Needs 2.2 and EIS 3.5. The purpose of initial water user meetings is to inform MR&I water users of the Red River Project and invite their participation in the planning process. The meetings will be held in Grand Forks, Fargo, Grafton, Wahpeton, Valley City, Lisbon, Langdon, and Hillsboro and other appropriate locations as needed. Information presented at the meetings will include; Reclamation's previous Red River Project studies (Phase 1A, 1B, and 2), outline of overall Red River Project planning process, and information on how the water users can participate during the study. The water users invited to the meetings will include, municipalities, small towns, industrial and large commercial water users, and rural water systems.

Gathering current water use data is one of the major early tasks required to establish the MR&I water system needs in the Red River Valley. The MR&I water users will be presented with a process for data gathering, which will require their involvement. MR&I systems will also be

involved in water system evaluations to identify if their facilities have any water quality as well as supply related deficiencies. MR&I water systems will be evaluated and water quality deficiencies identified in Needs 4.1.4.

Needs 2.1.1 - Preparation for Initial Water User Meetings

This task will include all of the general activities related to setting up the initial water user meetings with the exception of the tasks listed in Needs 2.1.2, 2.1.3 and 2.1.4. This includes finalizing the meeting locations, facilities (rooms), and providing invitations or public notices to the meetings. A master list of all communities, counties, rural water associations, major industrial users and other significant users will be compiled to assure that each potential water system is contacted. This also includes the development of a meeting agenda in coordination with others.

The objective of the water user meetings is to:

- Introduce the Red River Project to the MR&I water users including the summarization of earlier Reclamation studies
- Provide summary information on the Red River Project planning process
- Identifying opportunities for the water users to participate in the Needs and Options Report and EIS
- Obtain an initial indication of MR&I system interest in participating in the Red River Project and provide a forum for water users to express concerns about water quantity or quality reliability
- Identify water quality and quantity MR&I water system data gathering needs and each water system's -role~~s~~ in collecting the data (see Needs 2.1.2 for description of task)
- Discuss process to conduct water system evaluations to identify deficiencies (see Needs 4.1.4 for description of evaluation process)
- Identify local contacts
- Establish schedule to receive input and water use information
- Discuss follow-up water user meetings as described in Needs 8

Needs 2.1.2 – MR&I Water System Data Collection Process

The process for collecting current MR&I water system data will be one of the topics to be discussed at the initial water users meetings. Opportunities for the water systems to express additional water needs will also be discussed. The accuracy of the future Red River Valley water need projections is dependent on the participation of the MR&I water systems. This task describes how the water system data will be collected and the involvement of water users in that process. The data collected in this and other tasks will be compiled into a water system database as described in Engineering 1.1.

The general process for collecting current water system data will be as follows:

- Red River Valley water users (MR&I systems) will be invited, by letter, to initial water users meetings. The invitation letter will include a meeting agenda covering, among other things, current water system data collection and water system evaluations (Needs 4.1.4 – Evaluation of MR&I water quality, water system assessments).

- Water system data collection process will be described at the initial water user meetings. This will include discussion of a Reclamation letter (send after the meeting) that will be sent to each MR&I system requesting their assistance in providing water system data. To assist the water systems in this effort, Reclamation will arrange for local consultant engineering firms to assist in the data gathering and system evaluation process. Representatives of each water system will be asked to identify a consultant engineering firm to assist them (if needed) in the data collection and water system evaluation process.

- All of the data received from the consultant engineering firms (through the MR&I systems) will be compiled into a water system database (see Engineering 1,.1), which will be used during the course of developing the Needs and Options Report.

Needs 2.1.3 - Preparation of Water User Meeting Materials

This task involves the development of materials to be presented during the water user meetings. These materials may take the form of a handout document, mounted drawings and maps, or

power point presentation. Some of the information needed to develop the presentation materials will be developed under other SPOS tasks as noted below.

The water user meeting materials include:

- Overview of Reclamation Phase 1A, 1B, and 2 studies including:
    - Future water needs
    - Water shortage results
    - Previously studied appraisal-level alternatives (Eng. 2.1)
- Red River Project planning process and schedule
- Opportunities for water user to participate in planning process
- Process for collecting current water system data
- Process for evaluating water system deficiencies
- Discussion about follow-up water user meetings as described in Needs 8

Needs 2.1.4 - Preparation of Meeting Displays

This task involves the preparation of visual displays (table-top format) to present basic information about the Red River Project. The information included on the displays will be: background and introductory, major technical areas of study (needs assessment, hydrology, engineering, and environmental), alternatives previously studies, and study issues. These are basically the same displays that will be used in the public scoping meetings required under the NEPA process.

Needs 2.1.5 - Conduct Initial Water User Meetings

This task involves conducting and facilitating the water user meetings. This includes coordinating all presentations and documenting the feedback provided by the water users. Meeting materials, presentations, and displays will be developed under other tasks in this section. The meetings will be held in Langdon, Grand Forks, Hillsboro, Fargo, Grafton, Wahpeton, Lisbon and Valley Cityother appropriate locations as needed.

Needs 2.2 - Public Scoping for Water Needs

A public scoping and information gathering process in accordance with NEPA will be conducted in conjunction with the Red River Project EIS. The public scoping process is of particular importance for the Needs Assessment as it is an opportunity to gather input and information on the water needs for MR&I, aquatic environment, recreation, water quality, and water conservation measures. This is particularly true for aquatic and recreational water needs since there is no single group that represents these needs.

Needs 2.3 - Summarize Water User and Public Scoping Meeting Information.

The information and issues raised during water user meetings will be summarized and documented for reference during development of the Needs and Options Report. The aquatic and recreational water needs issues raised during public scoping will be summarized and documented as part of the EIS process, which will also be referenced during development of the Needs and Options Report.

Needs 2.4 - Review Water User Meeting Information

The information compiled from water user meetings and public scoping (related to aquatic environment and recreation water needs) will be reviewed prior to being used for other study tasks. Reclamation and/or study teams will review the information, changes incorporated where appropriate, and information/data used for other study tasks.

NEEDS 3 – COLLECTION OF EXISTING MR&I WATER USE (QUANTITY) DATA

Information on existing MR&I system water use (quantity) and related data in the RRVRed River Valley will be collected to facilitate the analysis conducted in the Needs and Options Report. Water quality data is collected and analyzed in Needs 4. Needs 2.1.2 (MR&I Water System Data Collection Process) describes that actual data collection process, which includes participation of MR&I water systems with the assistance of consulting engineering firms. This section identifies what water use or related data (population or per capita use) will be collected while Needs 2.1.2 describes the actual collection process. This information collected includes

population, water demand, connection types and number, and water system characteristics (i.e., type of delivery system, consumption vs.. non-consumptive, schedule, etc.). This and other water system data will be compiled into a project MR&I water system database as described in Engineering 1.1.1, "Develop Existing MR&I Water System Database".

Needs 3.1 - Population Update

This task compiles current (Year 2000) census data for counties, urban areas (cities, towns) and rural (water service and non-service) areas in the Red River Valley. These census data will be used to evaluate the accuracy of the estimates from previous studies, if necessary, and to form a basis for projecting future water needs. Population projections for the Needs and Options Report will be completed in Needs 6.2.

Needs 3.2 - Unserved Rural Residents

The Red River Valley may have some areas currently using inadequate local water sources that desire a more reliable or acceptable quality or quantity water source. Municipal and rural water systems adjacent to these areas will be contacted to assist in determining the number of unserved water users who have indicated an interest in being served from a regional water system. The data will also include the estimated size of the water demand required in these unserved areas. In some cases, municipal or rural water systems may have already conducted surveys of individuals related to expansion of their water systems. This type of data will be used to estimate water needs of those rural water users who wish to be served by a rural water system. The resulting water needs of these unserved individuals or areas requesting water will be included in the needs of adjacent municipal or rural water systems or be developed as a separate system if the potential water use is large enough to warrant an individual designation.

This task will also include an evaluation of small communities, who presently have their own water system, but may want to be served by an adjacent rural water system in the future. This task is related to the MR&I water system assessments conducted in Needs 4.1.4.

Needs 3.3 - Water Demand

Water demand records will be collected under this task and compiled under Engineering 1.1.1, "Develop Existing MR&I Water System Database". The water demand records will be used to compile historical water use for *larger* municipal water systems, all industries, and all rural water systems. Water demand data will generally *not* be collected for water systems serving less than 500. These smaller systems either already receive bulk water service from larger water systems or they are likely to be served by an adjacent rural water system in the future. ~~their water source has adequate capacity to meet their future needs.~~ Additional demand data will be collected for select smaller systems if quantity or quality concerns are discovered during the course of the study. See Engineering 1.1.1 for a more detailed discussion on what data will be collected from thatwhat water systems and Needs 2.1 for a discussion on the data collection process.

The period of record to be collected for water use will be the past 15 years (1987-2001), to ensure that a reasonable range of climatic events (wet and dry years) are documented. These records include, by source (either groundwater or surface water, or both), the following:

- Annual and monthly raw water diversion (1987-2001)
- Annual and monthly treated water deliveries from meters readings (1987-2001)
- Maximum daily use for each year (1987-2001)
- Number of service connections by types (residential, commercial, industrial)
- Annual and monthly treated water use by type (1987-2001)
- Current water distribution and use efficiency (Loss rates of unaccounted water)
- Annual population data to calculate per capita water usage (1987-2001)
- Wastewater return flow data (monthly release data for 1987-2001)

Information will also be compiled to determine reliability and source capacity of present raw water sources compared with current diversion and demands.

Needs 3.4 - Water System Characteristics

The water system characteristics for selected municipal, rural, and industrial water systems will be collected under this task. The water system characteristics will be compiled into a database under Engineering 1.1.1, "Develop Existing MR&I Water System Database".

Refer to Engineering 1.1.1 for a complete description of what water system data will be collected from which water systems. Generally, the following listed data will be collected from larger (serving a population of 500 or more) water systems, industries, and rural water systems.

The water system characteristics will include:

- DescriptionType of water system, including age and condition (if available) of system components
- Source description including type, available volume, diversion capacity and water quality (surface water or groundwater)
- Water treatment facilities including capacity and type (filtration, iron/manganese removal, disinfection (type, rate, residual), etc.)
- System pressure (minimum, maximum)
- System storage (number, type, and volume)
- Additional demands (fire flow, contract, etc.)
- General configuration (urban, rural, etc.)
- Summary of existing and anticipated water system problems, limitations and challenges
- Condition of distribution system, age, replacement schedule, materials of components, estimated leakage rates
- Status of water conservation program (if any) including whether users are metered
- Seasonal demand information
- Water right and permit appropriation date and amount
- Water system assessments for meeting SDWA requirements

Needs 3.5 - Current Water Rates

Current water rates and water rate structures will be collected for each water system. Water rate types (uniform, inverted, seasonal and marginal) and cost per 1,000 gallons of use or unit of delivery (ie. fixed rate, peak use, etc.) information will be collected. Information on seasonal rates and stepped rates, and capital repayment costs will be noted. The water system water rates will be compiled under Engineering 1.1.1 "Develop Existing MR&I Water System Database". Water rates will generally only be collected from larger (serving a population of 500 or more) water systems and established rural water systems.

Needs 3.6 - Review Existing MR&I Water Use Data

The existing MR&I water quantity data, updated as described under Needs 3.1 through 3.5, will be reviewed prior to being used for other tasks outlined in this SPOS. Reclamation and/or study teams will review the tasks associated with updating the existing MR&I data, changes incorporated where appropriate, and final task products used in other Needs SPOS tasks.

NEEDS 4 - WATER QUALITY DATA AND ANALYSIS

The existing water quality data will be updated and new data collected, as needed, for selected MR&I water system source water and finished water. Additional existing raw surface water quality data will be compiled to evaluate the impact on the aquatic environment and recreation, as briefly discussed in Needs 4.2. The comprehensive analysis of aquatic and recreational water needs, including water quality, is covered in Needs 9 and 10, respectively.

Needs 4.1 - Water Quality of MR&I Systems

Existing water quality data will be updated and new data collected, as needed, for each MR&I water system source water and finished water. This information will be compared to Environmental Protection Agency primary, secondary, and potential future regulations under the Safe Drinking Water Act (SDWA). The North Dakota State Health Department and Minnesota Department of Health will be the primary contact points for current water quality data for water sources and finished water. The Hydrology SPOS will also be modeling key water quality

parameters to estimate the raw water quality at each point in the Red and Sheyenne Rivers under present and future conditions for each alternative, including the effects on water quality from water withdrawals and return flows.

Generally, water quality data will be collected from the larger municipal water systems along with the industrial and rural water systems. Water quality data will not be collected from smaller municipal water systems serving less than 500 population. Approximately half of the smaller systems are served as a bulk customer of a larger system while the other half of the systems have their own groundwater source. Water quality data will be collected from any smaller system that has been identifiedappears to have a current or potential future water quality problem sbased upon the SDWA standards.

Needs 4.1.1 - Current Source Water Quality of MR&I Systems

This task will involve obtaining current records (last full calendar year or required reporting period) from the States of North Dakota and Minnesota, USGS, other agencies, and individual water systems on the source water quality from selected water systems at their diversion point. Information will focus on (1) Primary Standards; (2) Secondary Standards and aesthetic characteristics (TDS, sulfate, sodium, chloride, iron, H2S, manganese, etc.); and (3) other water quality parameters that could affect treatment or cause issues with potential future standards.

Needs 4.1.2 - Finished Water Quality for MR&I Systems

This task will involves collecting finished water quality data from selected larger municipal water systems, industries, and rural water systems. Each selected water system will be evaluated to identify finished water quality deficiencies based on regulatory violation history, water quality testing results, and water system assessments as described in Needs 4.1.4. Key issues concerning finished water quality will be identified for each water system. The water quality standards of concern will be identified in Needs 4.1.3.

Needs 4.1.3 - Preparation of Current Regulatory Overview for MR&I Systems

This task involves preparation of a regulatory summary of current SDWA standards and regulations, including proposed regulations in the promulgation process. The promulgation

process is a procedure the Environmental Protection Agency uses to establish or modify drinking water standards which includes a period of public review and comment.

An understanding of future water quality standards and their potential impact on water supplies is necessary in the evaluation of water needs. Proposed rules or standards will be addressed in terms of anticipated regulations, regulating dates, and potential impacts to groundwater and surface water users. This regulatory overview will cover, but is not limited to the following:

- Current primary standards
- Current secondary standards
- Surface Water Treatment Rule (SWTR)
- Enhanced SWTR (Interim ESWTR, Long-Term 1 ESWTR and Long-Term 2 ESWTR)
- Total Coliform Rule
- Disinfection/Disinfection By-Product Rule (Stage 1 and Stage 2 D/DBP Rule)
- Lead and Copper Rule
- Radionuclides
- Arsenic and radon
- Groundwater disinfection
- Information Collection Rule
- Regional water system operations
- Radon Filter Backwash Recycling Rule
- Others including possibly Sulfate

A narrative report will be developed that identifies the primary and secondary water quality standards that will be used to evaluate the water treatment effectiveness of each Red River Valley water system in the Red River Valley. This will include current SDWA standards plus some more restrictive standards that are in the promulgation process. Needs 4.1.4 will compare these standards with the current treated water quality for each water system and identify any current or possible future water quality deficiencies.

Needs 4.1.4 – Evaluation of MR&I Water Quality (Water System Assessments)

This task involves conducting water system assessments on selected MR&I water systems and writing individual water system assessment reports. The water system assessments will be conducted on the larger (over population of 500) municipal water systems in addition to industrial and rural water systems in the study area. This includes the evaluation of current treated water quality for each water system and identification of deficiencies that may need to be addressed in the Red River Project. The current water quality data is collected in Needs 4.1.1 and 4.1.2 and the SDWA standards, which will be the basis of comparison, are identified in Needs 4.1.3.

Needs 2.1.2 (MR&I Water System Data Collection Process) describes a task where current water system data is collected. Also referenced in this discussion are water system evaluations that will be conducted with the assistance of consulting engineering firms of the MR&I systems choosing. Each water system's current water quality will be compared to present and likely future SDWA standards (as defined in 4.1.3) to determine if there will be compliance problems in the future. Each water system's regulatory compliance history will also be reviewed to identify water quality problems. The consulting firm will document any deficiencies and propose possible solutions, including costs, in the water system assessment reports. Solutions to consider should include rehab or new water treatment processes, new water sources (raw), or bulk water service from another entity.

No water system assessments will be conducted on small water systems serving less than 500. However, this task will include a search of North Dakota Department of Health and Environmental Protection Agency SDWA databases to determine if any small (under 500 served) water systems have any water quality violations, which may indicate a water quality problem that should be investigated underas part of this study. The task will include the writing of a summary report detailing the results of this investigation, including recommendations on specific smaller water systems, which may need a water system assessment.

Needs 4.2 - Water Quality for Aquatic Environment and Recreation

Water quality issues and analysis related to aquatic environment and recreation water needs will be covered in Needs 9 and 10.

Needs 4.3 - Summarize Water Quality Analysis

The water quality data and analysis conducted under Needs 4.1 will be summarized and documented for use in other study tasks.

Needs 4.4 - Review of Water Quality Analaysis

The existing water quality data updated and analyzed as described under Needs 4.1will be reviewed and summarized prior to being used for tasks outlined in other SPOSs. Reclamation and/or study teams will review the updated water quality data and analysis, changes incorporated where appropriate, and final data provided for other SPOS tasks.

NEEDS 5 - WATER CONSERVATION ANALYSIS FROM ENGINEERING SPOS

This task is covered in more detail in Section 1.2 (Impact of Water Conservation Measures on Water Demand in the Red River Valley) of the Engineering SPOS. The task is summarized here because the results of the analysis will be used later in NeedsSection 6 (Future MR&I Water Demands) for the Needs Assessment.

The task will evaluate the current water conservation practices (measures) in the RRVRed River Valley and compare their effectiveness to the accepted practices used in other parts of the United States. From this comparison, a "use reduction criteria" can be developed which can be applied to each water system in the study area. The analysis will quantify the additional water usage savings that can be reasonably expected in the RRVRed River Valley using other water conservation measures.

NEEDS 6 - FUTURE MR&I WATER DEMAND

This task estimates the future MR&I water demand within the Red River Valley in North Dakota. Water needs for the aquatic environment and recreation are discussed in Needs 9 and 10, of this SPOS. Design criteria for average and maximum day use will be established together with project design protocol for system storage and sizing. Future population projections will be conducted using four different sources of analysis. Each identified municipal and rural water system will be analyzed and presented separately.

Needs 6.1 - Establish Design Demand Rates

Design average and maximum day/monthly demand rates, either on a per capita or on a service connection basis, will be established for all potential users based on existing water demand data (Needs 3.3) and input provided from water users (Needs 2.1). Design demand rates will include the possible water use reductions associated with water conservation measures (Needs 5). The users will be segregated into groups representing communities with populations over 500, under 500, and rural water systems. Average and maximum daily and monthly demand rates will be established for each municipal and rural water system.

Needs 6.2 - Future Population Projections

A design year of 2050 will be used for future population projections. Five-year planning increments will be used as a timeline. Needs 1.4 establishes the methodology to be used for population projections. Based on a design year of 2050, population projections will be updated using the most recent applicable data. Data sources could include, but are not limited to, participant's projections, North Dakota and Minnesota State Data Centers, 2000 census data, and the Bureau of Reclamation data in the previous Reclamation Red River Valley Water Assessment, Phase II; *Appraisal of Alternatives to Meet Projected Shortages* (January 2000).

Potentially, four sources of population projections may be used in the study. Three of the projections could come from independent sources such as state or federal agencies or from other sources (example: Reclamation, North Dakota State Date Center, academic institution, or private consultant) as appropriate. Local cities and counties could provide their population projection

information as a potential fourth source of data considered in the study. The population projections will be conducted at a more sophisticated level as compared to the trends analysis which was conducted in the Phase II study. This population projection task will be conducted in coordination with other data centers and universities and shall include migration rates, birth rates, death rates, etc.

Population projections for rural water associations will be made on the basis of units, consisting of farms and homes. Unserved rural residents who have expressed an interest in joining adjacent existing municipal and rural water systems will be included in those systems. Similar regional rural water systems with long track records (rural or adjacent to urban areas) will be investigated to determine long-term sign-up rates to assist in estimating future expansion of rural water systems in the Red River Valley of North Dakota.

Needs 6.3 - Future Water Demand

Projections of future water demand will be made for each identified community or rural water system by applying design year 2050 population projections (Needs 6.2) to the design demand rates (Needs 6.1). The historical trend of increased per capita water use rates over time will be investigated to determine if it is appropriate to include such a factor in the design water use rates. The present peaking factor (peak daily and monthly demand) will be determined and calculated future peaking factors will be applied to establish maximum day demand based upon the 2050 planning period. The per capita water demand rates will reflect reasonable and sustainablethe water conservation factors identified in the analysis conducted in Section 1.2 of the Engineering SPOS.

Needs 6.4 - Future Industrial and Large Commercial Water Demands

This task will develop realistic future industrial and large commercial water demand estimates based on a range of potential economic development scenarios for the Red River Valley to establish peak daily, monthly and annual water use rate estimates. The task will use specialized expertise in forecasting economic development trends for typical Red River Valley industrial development categories (e.g. food processing likely vs. steel production unlikely). Various

levels of potential development may be evaluated to estimate a range of potential industrial water demands. These levels of development may include no growth, limited expansion, and major changes in regional/national development that could significantly increase industrial and commercial development into the Red River Valley region (i.e., energy policy, drought, etc.). The range of economic developments will be compared to economic forecasts for the adjacent states in the region.

The study task includes interest surveys to develop a baseline of potential industrial water users in the region. This will include data on businesses or industries that moved or didn't locate in the study area due to the unavailability of adequate water supplies. Business closures/relocations due to non-water related factors will also be documented to establish a basis of comparison. The historic trend will be analyzed to estimate the number and type of industries in the study area and to establish the value different types of industries place on available water supplies when considering location in the Red River Valley. Organizations such as the Greater North Dakota Association will be used to assist in data gathering activities. Data generated from the above survey, as well as other sources, will be used to define potential industrial water needs in the Red River Vvalley.

A baseline of current and future water costs will be developed from information provided by local, and state agencies, communities, and industries. The water supply, treatment, and delivery costs, along with other determining factors, will be used to assess the likelihood that certain commercial developments and/or industries may locate in the Red River Valley over the assumed 2050 planning period.

A sensitivity analysis of industrial water needs will be conducted to analyze how various industries view water costs in their overall cost of production. An analysis will be conducted to determine ranges or limits of water costs that support new development or expansion of existing industrial facilities in the Red River Valley.

Needs 6.5 - Summarize Future MR&I Water Demands

The future MR&I water demand data developed under Needs 6.1 through 6.4 will be summarized and documented for inclusion into the Needs and Options Rreport and for use in other study tasks.

Needs 6.6 - Review Future MR&I Water Demand

The future MR&I water demand data developed under Needs 6.1 through 6.5 will be reviewed prior to being provided as water demand data for Hydrology SPOS tasks. The future MR&I water demand tasks will be reviewed by Reclamation and/or study teams, changes incorporated where appropriate, and final task products provided for use in Hydrology tasks.

NEEDS 7 – DEVELOPMENT OF CONCEPTUAL ALTERNATIVES FOR FOLLOW-UP WATER USERS MEETINGS

This task involves the development of conceptual alternatives to be presented at follow-up MR&I water user meetings, as described in Needs 8. The conceptual alternatives shall include adequate information to assist the MR&I systems in their decision to participate in a future Red River Project. This information will provide relevant descriptions of water supply system alternatives and their estimated costs. Conceptual alternative configurations will be developed at the appraisal-level and only for those alternatives that have been selected in the EIS for further study.

Needs 7.1 - Development of Conceptual Alternatives

Conceptual alternatives will be developed at the appraisal-level for each alternative selected in the EIS for further study. The various conceptual alternatives will provide a range of potential water supply solutions and associated costs. The alternatives will be grouped into three types: “no action”, in-basin, and inter-basin. The conceptual alternatives could include alternatives studied in previous reports (Phase II, *Appraisal of Alternatives to Meet projected Shortages*, January 2000) in addition to any new alternatives (Engineering SPOS, Section 2.2) that are developed through the scoping process or further study.

A conceptual "no action" alternative will be developed under this task. The "no action" alternative is defined as the future without any federal action which in this case is the Red River Project. In another words, the future of the Red River basin water resources and water systems without any Red River Project. For example, community and rural water systems will incur future capital and O&M costs under the "no action" alternatives due to expansions in their systems and changing Safe Drinking Water Act (SDWA) regulations.

The conceptual alternatives information will include water source identification (Missouri River, groundwater, storage of drainage water, current source with reuse and water conservation, etc.), identification, delivery methods, treatment requirements and other aspects of the alternatives. The information will also include conceptual capital construction costs and operational cost estimates for each alternative. These estimates will be utilized in preparing preliminary conceptual user rate charges for delivering either raw or treated water (depending on existing infrastructures) for the communities and service areas developed earlier. The preliminary cost information will include estimated federal repayment requirements and accrual costs (where appropriate), funding options, and potential financing opportunities. Some of this data will be developed under the Financial SPOS, task 2. The information developed in the Phase II report along with other sources will be used to generate conceptual alternative information where possible.

The preliminary MR&I user cost analysis will be made on a unit value ($/1,000 gallons treated water) and include a breakdown of the following:

- Capital cost
- Local/Federal capital cost sharing
- Operation and maintenance cost
- Facility replacement cost
- Water (raw) cost as appropriate
- Water delivery rates and options
- Repayment costs associated with existing Garrison Diversion Unit facilities

This information, with appropriate explanation of accuracy and risk, will be used to further inform various water user groups in the Red River Valley about the types of alternatives being considered and potential costs, associated risks, and benefits with providing a more reliable water source. This information would be consolidated into an information document or pamphlet to facilitate water user review and understanding of the alternatives being considered, user costs, the risks and advantages, and the engineering, social, and environmental concerns and opportunities. Drawings, maps or displays will also be developed to assist in the presentation of the alternative information.

Needs 7.2 - Review Conceptual Alternatives for Follow-up Water User Meetings

The conceptual alternatives developed under Needs 7.1 will be reviewed prior to being used for the follow-up water user meetings (Needs SPOS, Section 8). Reclamation and/or study teams will review the conceptual alternatives, changes incorporated where appropriate, and final task products provided for use in the follow-up interest survey process.

NEEDS 8 - FINAL MR&I WATER NEEDS

Needs 6 (Future MR&I Water Demands) established the total future MR&I water demands for the Red River Valley in North Dakota, but did not include a process to determine whether the water systems had an interest in being served by a Red River Project. Needs 8 will determine that interest and quantify the water needs of those water systems that desire to participate in the Red River Project.

Follow-up interest surveys will assess the potential interest in being served by the proposed Red River Project. The follow-up surveys will include more detailed information about each water users needs, conceptual alternatives to meet those needs, and the estimated capital and annual costs for each conceptual alternative. This additional survey will be used to obtain a higher degree of project commitment by the individual Red River Valley water users based on their increased understanding of potential impacts and costs of a more reliable and improved water supply.

Needs 8.1 - Follow-Up Interest Meetings and Surveys

Follow-up interest meeting and surveys will be conducted to assess the level of interest water systems have in participating in the Red River Project. Meetings similar to the initial water user meetings (Needs 2.1) will be conducted to present project information on estimated water needs, conceptual alternatives to meet those needs and associated costs. Survey forms will be developed (Needs 8.1.4) to assess the level of interest of the water systems.

Needs 8.1.1 - Compile Needs Assessment Profiles.

A needs assessment profile will be developed for each potential MR&I water supply system. The key issues contributing to the needs profile will include water quality classifications, population projections, demand needs, potential upgrade requirements for treating existing supplies to water quality standards, and all associated costs.

Needs 8.1.2 - Conceptual Alternatives Information, Materials and Displays

The appraisal-level conceptual alternatives to be presented at the follow-up water user meetings are developed in Needs 7. This task uses those products to develop any additional data, materials and displays required to convey that conceptual alternative information to the water users.

Needs 8.1.3 - MR&I Water Service Costs - Capability of Paying Project Costs~~/ Ability to Pay~~

This task will evaluate the capability of the Red River Valley water users to pay for improved water supplies and the amount water users could pay for water services and compare them to the conceptual water service rates (Needs 8.2) developed in the study. Economic factors such as income, existing debt, local borrowing costs, and utility costs of the region will be considered in the capability of the users to pay project costs. Water service cost data will be gathered from surrounding water systems to develop a range of water rates for various sized systems. These data along with surveys of potential water users (Organizations such as Eastern Dakota Water users could be used as part of the survey process) will be used to establish a range of water service costs that will define the capability of the Red River Valley water users to pay for water. Willingness to pay will be based on previously completed water demand studies. The results of

this analysis will be one of the criteria used to determine the reasonable Needs and Option Report alternatives to be evaluated in the Red River Project EIS.

Needs 8.1.4 - Develop Interest Survey Form and Process

An interest survey form will be developed to obtain conceptual commitment agreements from various water systems. The non-binding commitment agreements will be used to define initial system layout for each alternative generated in the Needs and Options Report. The commitment agreements will not financially commit any entity to the project, but rather will serve as a first step to identify a commitment to a future water service contract at the conclusion of the planning process, prior to implementation.

The interest survey process will include a number of regional workshop meetings to distribute literature, needs assessment profiles (population projections and water needs), describe the project (conceptual configurations) and potential cost implications, answer questions, and distribute the interest survey. For those entities not attending workshops, information and surveys will be mailed to the respective contact personnel. It is assumed that direct personalnel contact and follow-up will be required for some of the potential users to complete the interest survey.

Needs 8.1.5 - Review Interest Survey Data and Interest Survey Process

The follow-up interest survey products as described in Needs Sections 8.1 through 8.4 will be reviewed prior to being used for follow-up interest surveys. Reclamation and/or study teams will review the products, changes incorporated where appropriate, and final products used in the follow-up interest survey process.

Needs 8.1.6 - Conduct Follow-up Interest Meetings and Interest Surveys

Follow-up interest meetings and surveys will be conducted to obtain conceptual commitment agreements from various water systems. The interest survey will be conducted as developed under Needs task 8.1.4.

Needs 8.1.7 - Summarize Follow-up Interest Meetings and Surveys

The results from the follow-up interest meetings and surveys will be compiled and the results summarized. This summary will provide a more accurate estimate of water user demands based on the level of interest indicated during the survey process. The survey will also provide an indication of their preference for water supply alternatives. The summarized results of the surveys will be used for the water supply analysis conducted under the Hydrology SPOS. The water demands will be compared to the available water sources (surface and ground water) and any shortages identified.

Needs 8.1.8 - Review Results of Follow-up Interest Meetings and Surveys

The results from the follow-up interest meetings and survey results as described in Needs 8.1.1 through 8.1.7 will be reviewed prior to being used to modify RRVRed River Valley water needs. Reclamation and/or study teams will review the follow-up interest meeting and survey results, changes incorporated where appropriate, and the modified water use data provided for use in the Hydrology SPOS.

Needs 8.2 - Final MR&I Water Needs

This task combines all of the MR&I water needs work that were accomplished under previous Needs tasks and quantifies the MR&I water needs to be met under this study. The task will take the results from Needs 6 (Future MR&I Water Demand) and Needs 8.1 (Follow-up Interest Meetings and Surveys) and develop the final MR&I water needs to be used in the study. A tabulation of final water needs for every water system (similar to Table 38, page 98 in the Phase IA Report) will be developed to document the needs in addition to a narrative summary. A separate narrative will be written for each water system listed in the tabulation to describe their water needs in more detail including a complete description of how the water demand was estimated and the feedback provided by the water system in meetings.

Needs 8.3 - Review of Final MR&I Water Needs

The final MR&I water needs as outlined in Section 8.2 will be reviewed prior to being used for other SPOS activities. The final MR&I water needs will be reviewed by Reclamation and/or

study teams, changes incorporated where appropriate, and final products used in other SPOS activities.

NEEDS 9 - AQUATIC ENVIRONMENTAL NEEDS

Alternatives for meeting Red River Valley water needs could affect surface waters, including rivers, reservoirs, lakes, and wetlands. The use of rivers as a conveyance feature for municipal, rural, and industrial water would affect water flow, in-stream habitat, seepage and bank saturation, water loss, erosion, water quality, river geomorphology, bank stability and other physical and chemical characteristics. Alternatives that do not use rivers for conveyance could still indirectly affect in-stream flows, channel geomorphology, water quality, and habitat availability. Water quantity and quality, and habitat needs will be evaluated for aquatic and riparian species associated with potentially affected surface waters. Impacts to the Sheyenne River, the Red River, and other surface waters identified as potential water sources or conveyance features, will be evaluated for all alternatives. The alternatives will be assessed in terms of environmentally positive and negative effects and potential mitigation. The analysis will serve to help identify environmental needs and potential effects to be evaluated in the EIS.

Needs 9.1 – Determine Integrated Approach to Determining Aquatic Need

The assessment of aquatic need in a particular fluvial system can be broken down into five categories: flow regime (hydrologic), water quality, geomorphology, biotic interactions, and energy inputs and pathways. These mechanisms are factors to consider when identifying the aquatic need component of a water resource allocation issue that includes concerns for riverine habitat resources. The five identified components will be evaluated to assess the aquatic need of the Red and Sheyenne Rivers in North Dakota. The biotic interactions component will not be addressed separately, but rather will be incorporated into the other four components, mainly hydrologic.

Needs 9.1.1 – Reference Site Selection

A reference condition is the best available representative system within a geographic unit, in a natural condition, with respect to habitat, water quality, biological integrity and

diversity, land use, and riparian conditions. Candidate reference sites will be identified and assessed prior to determining those that are least impacted. This will be done through the use of existing data. The degree of disturbance for each reference site will be determined and the specific candidate reference sites to be used to characterize aquatic need will be selected. The sites will subsequently be used to determine aquatic need by characterizing the physical, chemical, and biological conditions defining need.

Needs 9.1.2 – Energy Inputs and Pathways Component

A general qualitative approach will be utilized to assess the energy inputs and pathways component of the aquatic needs analysis. Due to the complex nature and associated lengthy timeframes and high costs of conducting a comprehensive quantitative energy input analysis, a more descriptive approach will be utilized. An evaluation and description of the variability in energy input to the Sheyenne and Red Rivers, and the extent that the present magnitude of energy input to the rivers, is within a reasonable range necessary to maintain the aquatic ecosystem, will be conducted.

Needs 9.1.3 – Hydrologic Component

The hydrologic component will be a quantitative approach to determine the desired flow regime (i.e., establish target flows by river reach and season) for the aquatic community spatially and temporally. The amount of physical habitat available for aquatic life will be quantified longitudinally and seasonally, encompassing a range of flows. This information will be utilized to quantify the range of seasonal flows, and subsequent flow variability that minimizes the likelihood of reduced reproductive success and mortality for aquatic species. In addition, the flows necessary to maintain the appropriate interaction between the water course and the riparian zone will be established.

Needs 9.1.4 – Water Quality Component

The water quality of the Sheyenne and Red rivers will be assessed using existing data. The parameters used to define water quality will be determined and then water quality, relative to river reach and season, will be quantified. Once this has been established, the desired water quality necessary to maintain the aquatic community in its present state will be described.

Needs 9.1.5 – Geomorphologic Component

The geomorphologic component of the aquatic needs analysis will be largely incorporated into the hydrologic analysis. The flow regime necessary to provide the necessary hydrologic interaction between the water course and the riparian zone, and the necessary hydrologic interaction between the water course and the river valley, will be quantified. In addition, the flow regime necessary to provide the desirable stable-state for various geomorphologic aspects (i.e., planform, aggradation, degradation, channel geometry, channel rates, etc.), will be determined.

Needs 9.2 – Aquatic Needs Study Report

A draft aquatic needs study report will be completed using data gathered in Needs 9.1.1 – 9.1.5.

Needs 9.3 – Aquatic Needs Study Report Review

The draft report will be reviewed internally, and then distributed to members of the technical team for scientific review. Comments will be received and the appropriate changes (determined by Reclamation) will be made.

Needs 9.4 – Complete Aquatic Needs Study Report

Once all comments have been reviewed and the appropriate changes have been made to the aquatic needs study report, a final aquatic needs study report will be prepared and distributedreleased.

NEEDS 10 - RECREATION NEEDS

DWRA identified recreation as one of the water needs to be addressed in the Needs and Options Report. A recreation assessment will be conducted for the Sheyenne and Red Rivers and Lake Ashtabula in North Dakota to quantify present and future water-related recreation needs. The recreation needs assessment will also provide data for analysis of potential recreation impacts in the EIS (EIS 7.4).

Needs 10.1 - Recreation Needs Assessment

Water-based and water-dependent recreation needs will be identified through an inventory of recreation resources and their current and projected future level of use in the Red River Valley. Information will be collected for all recreational activities for all seasons of use. A literature search will collect and evaluate existing recreation data for the Sheyenne and Red Rrivers, Lake Ashtabula and associated adjacent cities and counties within the Red River Valley. This literature search will include cities and counties adjacent to the Red River in North Dakota and Minnesota.

The assessment will address flow requirements for river-based recreation activities such as bank fishing, rafting, canoeing, swimming, wading, and boat launching, as well as water surface elevation requirements for flat-water (i.e., reservoir) recreation activities such as boating. Water-dependent recreation activities such as hiking, biking, and camping, as well as winter recreation activities such as ice fishing and snowmobiling will be addressed and documented. A recreation facilities inventory of existing and planned developments will be conducted and documented in the assessment report.

The North Dakota State Parks and Recreation Department periodically prepares the North Dakota Comprehensive Outdoor Recreation Plan (SCORP). The SCORP documents current types of recreation activities in the state and estimates future use on a state-wide basis. In addition to the North Dakota SCORP, the Minnesota SCORP and other recreation plans and reports will be used to complete the recreation assessment.

Reclamation will also meet with state and local agencies in North Dakota and Minnesota (e.g. North Dakota Game and Fish Department, North Dakota Parks and Recreation Department, Minnesota Department of Natural Resources, county and city park boards and planners) to assist in identifying existing and future water-related recreation needs. Once all the recreation resources/activities are identified, similar resources/activities will be grouped into specific categories to facilitate evaluation. Future water quality and quantity recreation needs will be estimated based upon existing data. In cooperation with other disciplines, the economic value of

recreation will be determined and the existing and future municipal recreation needs will be addressed.

Needs 10.2 - Review of Recreation Needs Assessment

The recreation needs assessment, as outlined in Section 10.1, will be reviewed by Reclamation and/or the appropriate study teams. Review comments will be provided to Reclamation for consideration in completing the final recreation needs assessment.

Needs 10.3 – Complete Recreation Needs Assessment

Reclamation will complete the recreation needs assessment after considering review comments provided in Needs 10.2. The recreation needs assessment shall be summarized in the Needs and Options Report and detailed documentation provided in the Needs Assessment appendix.

NEEDS 11 - NEEDS ASSESSMENT APPENDIX

A Needs Assessment Appendix will be developed which shall summarize all of the tasks identified in the Needs SPOS.

Needs 11.1 - Compile and Write Needs Assessment Appendix

This task describes the development of the Needs Assessment Appendix that summarizes the tasks identified in the Needs SPOS. The Needs Assessment Appendix will include the following topics:

- Project Mobilization and Study Approach
- Initial Water User and Public Scoping Meetings
- Collection of Existing MR&I Water Use (Quantity) Data
- Water Quality Data and Analysis
- Summary of Water Conservation Analysis and Affects of Water Demands
- Summary of Conceptual Water System Alternatives Presented to Water Users
- User Interest Survey and Follow-up Water User Meetings

- Final MR&I Water Needs
- Aquatic Environment Needs
- Recreational Needs
- Conclusions
- Review and Comment Appendix
- Final Report and Supporting Information

Needs 11.2 - Review Needs Assessment Appendix

The draft Needs Assessment Appendix as outlined in Needs 11.1 will be reviewed by Reclamation and/or study teams as necessary.

Needs 11.3 - Complete Needs Assessment Appendix

Reclamation will incorporated the review comments where appropriate and complete the Needs Assessment Appendix.